CDF/D0/AD Luminosity Task Force meeting

CDF and D0 luminosity comparisons for recent stores

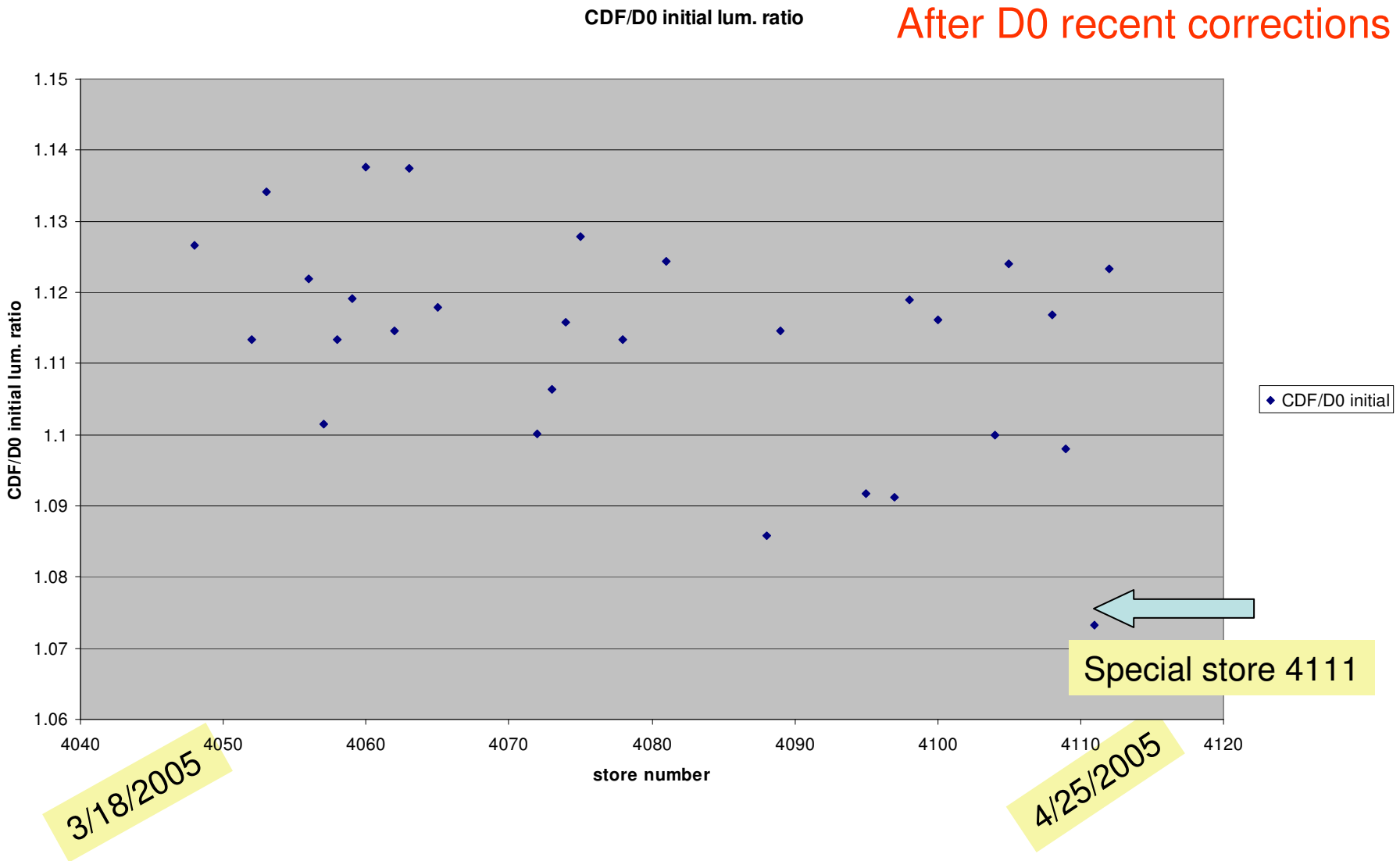
April 27

Vaia Papadimitriou

- The calculated luminosity assumes beta* 35 cm in all following plots for both CDF and D0.
- The beam is assumed to be circular.
- The calculated luminosities have an uncertainty of the order of 15%.

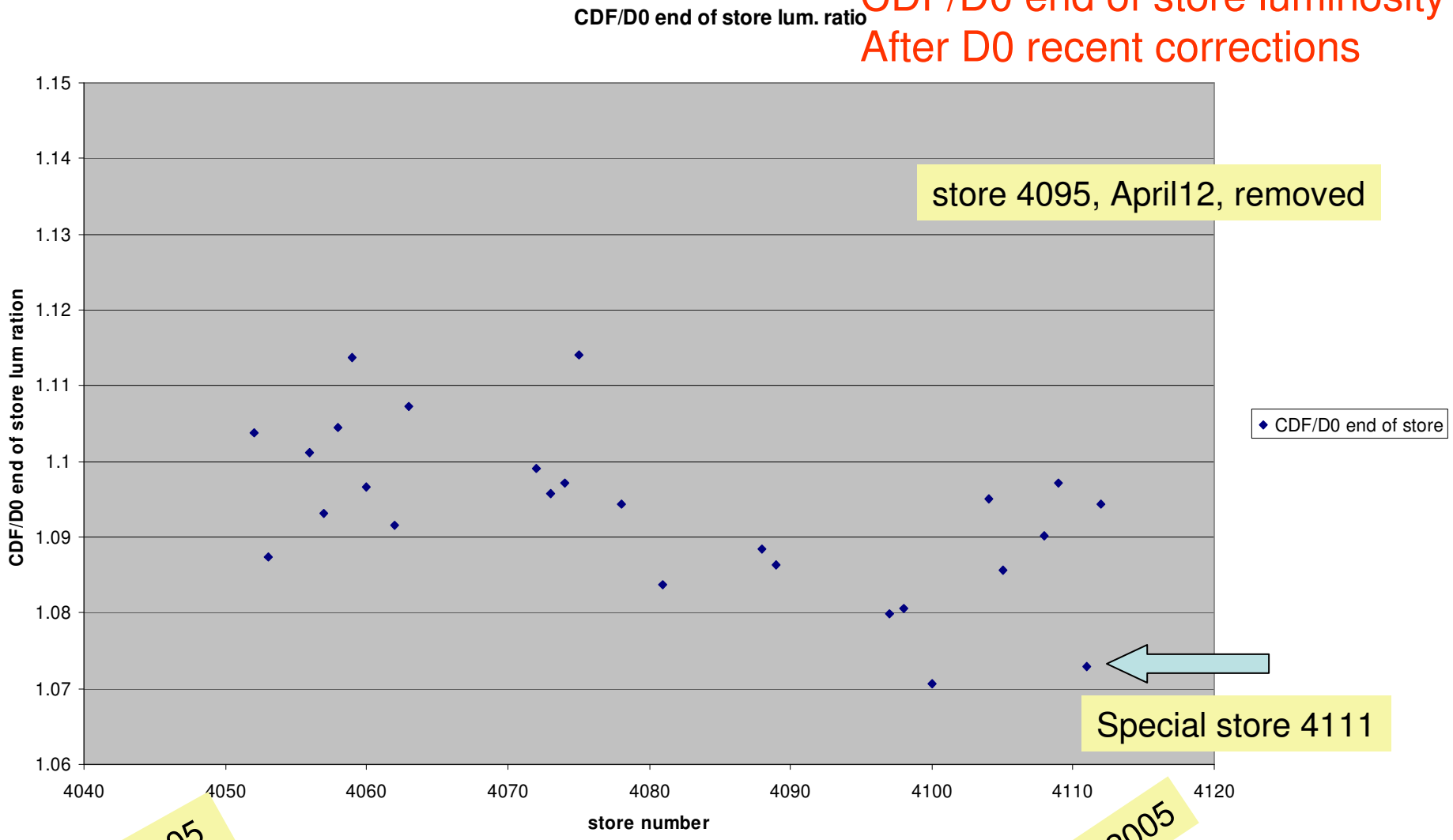
Using stores 4048-4112

CDF/D0 initial luminosity
After D0 recent corrections

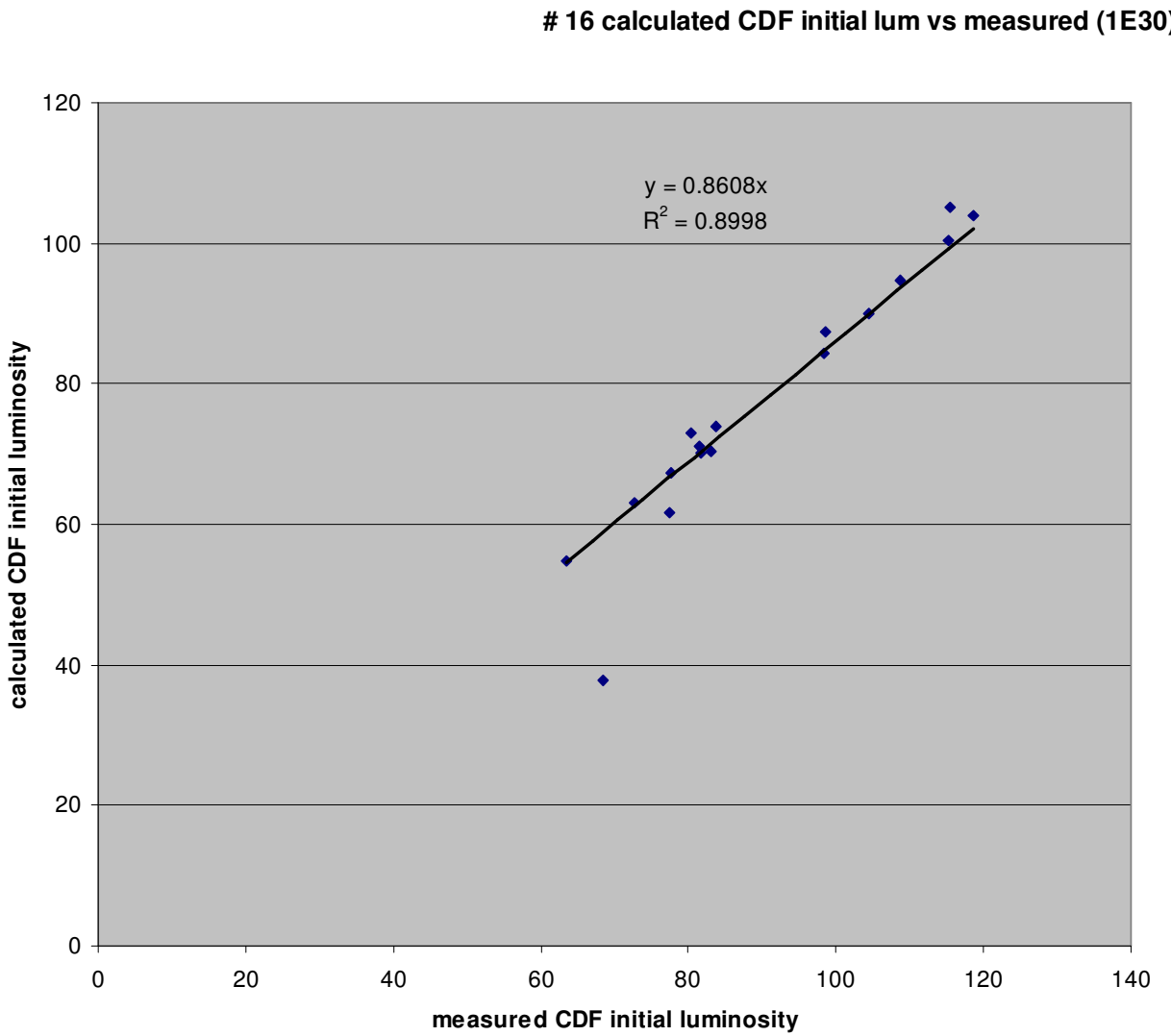


Using stores 4048-4112

CDF/D0 end of store luminosity
After D0 recent corrections



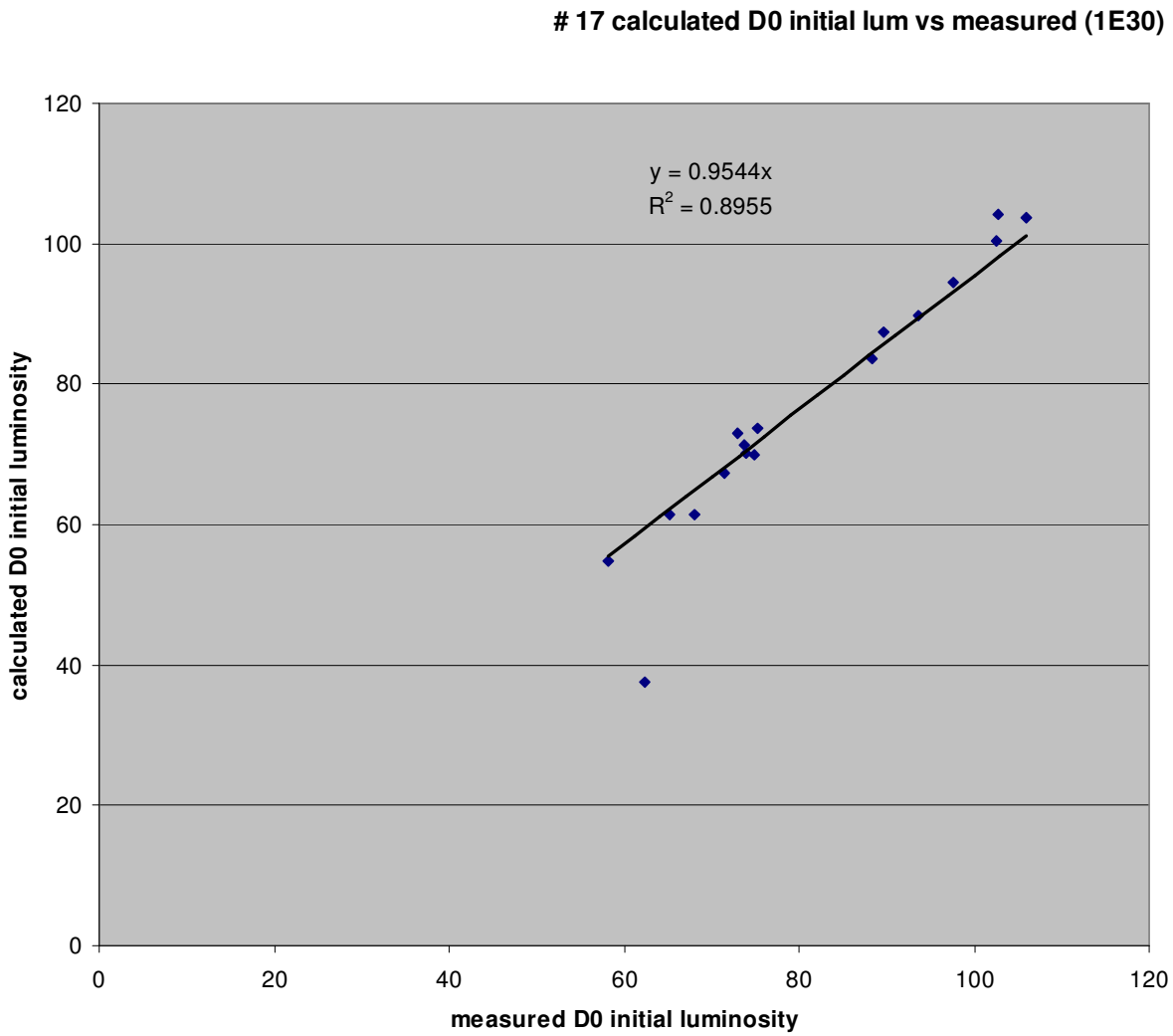
Using stores 4048-4112



CDF initial
Expected vs measured

Store 4059 excluded
Intercept set to 0

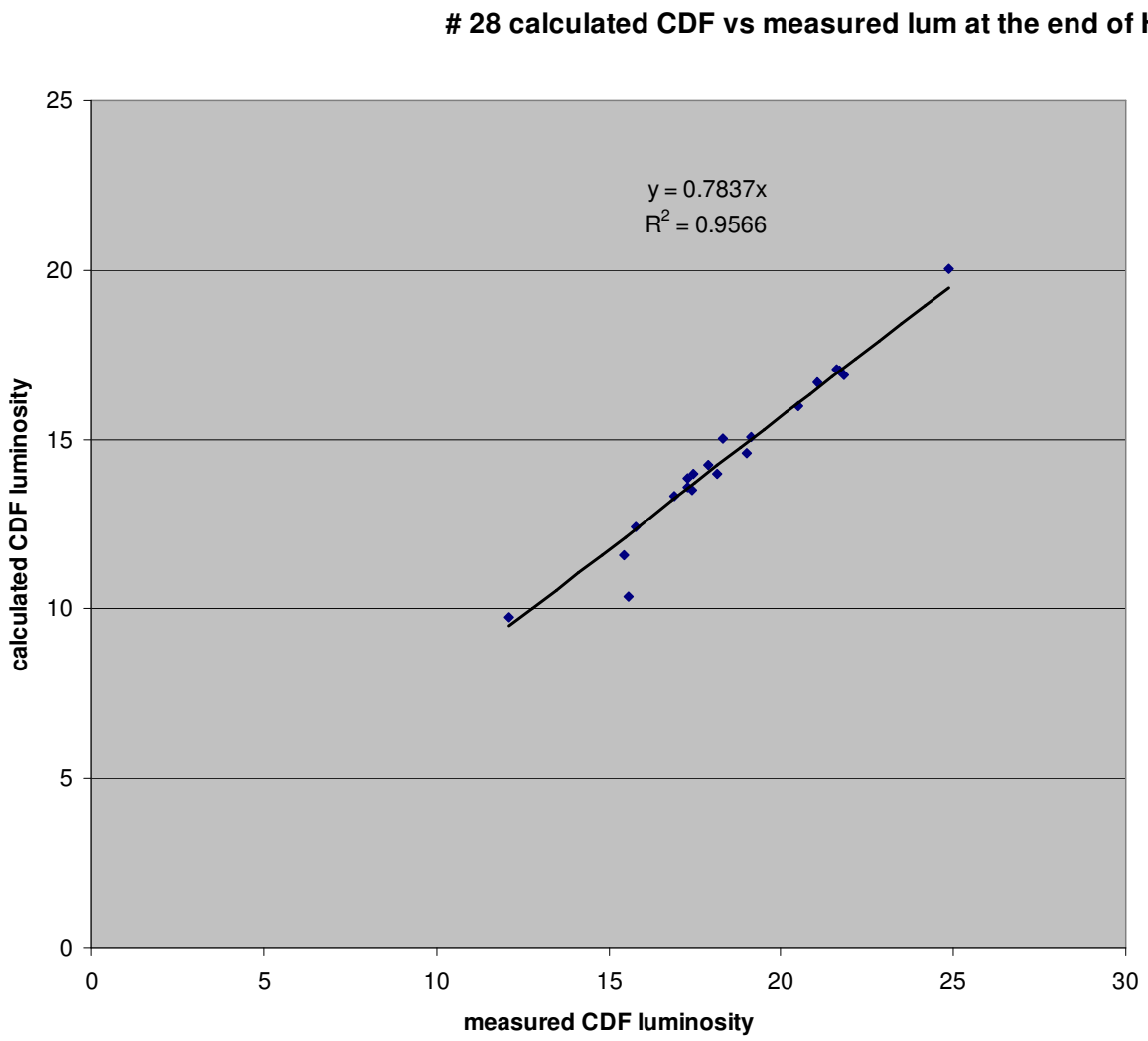
Using stores 4048-4112



D0 initial
Expected vs measured

Store 4059 excluded
Intercept set to 0

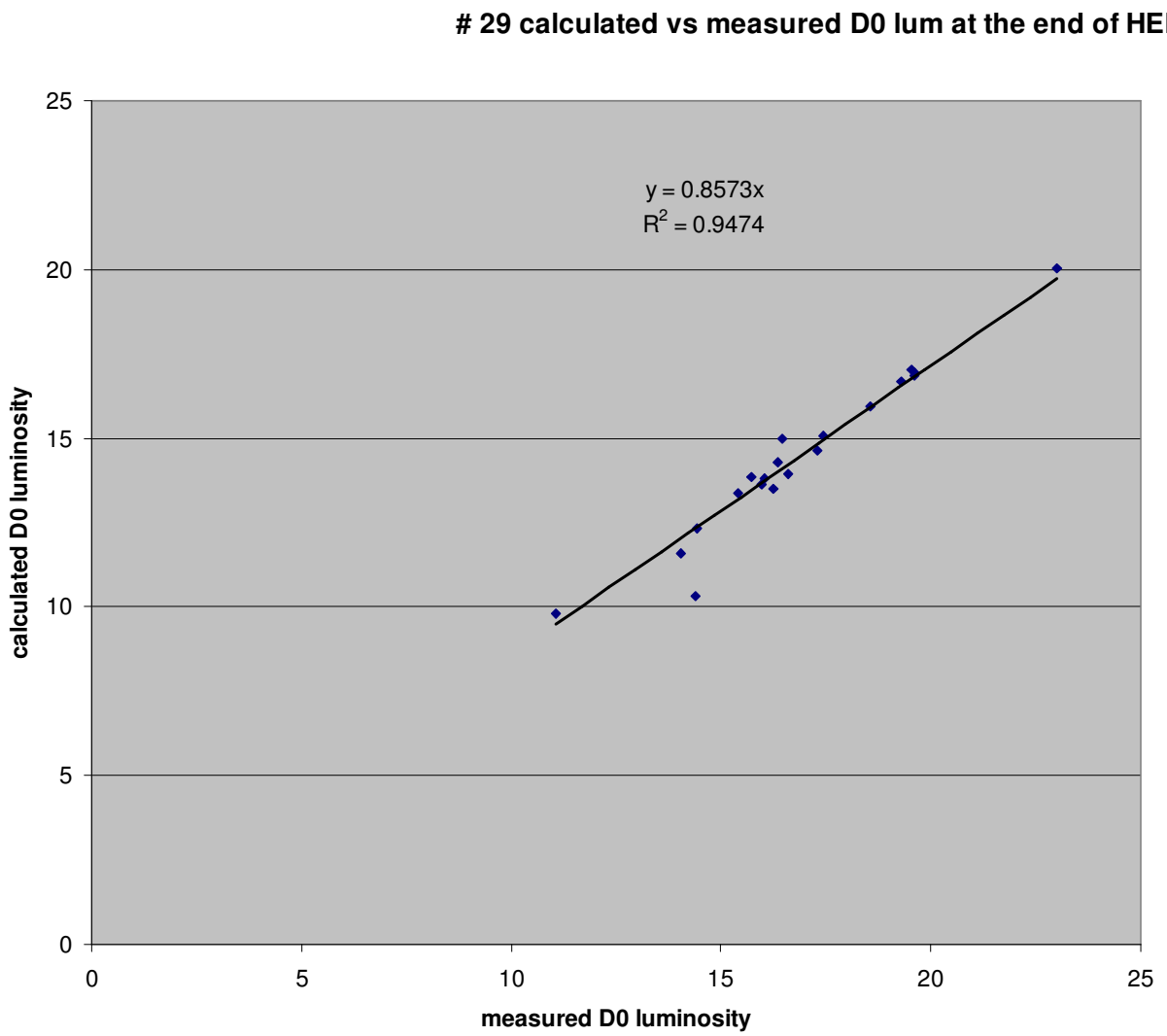
Using stores 4048-4112



CDF end of store
Expected vs measured

Intercept set to 0

Using stores 4048-4112

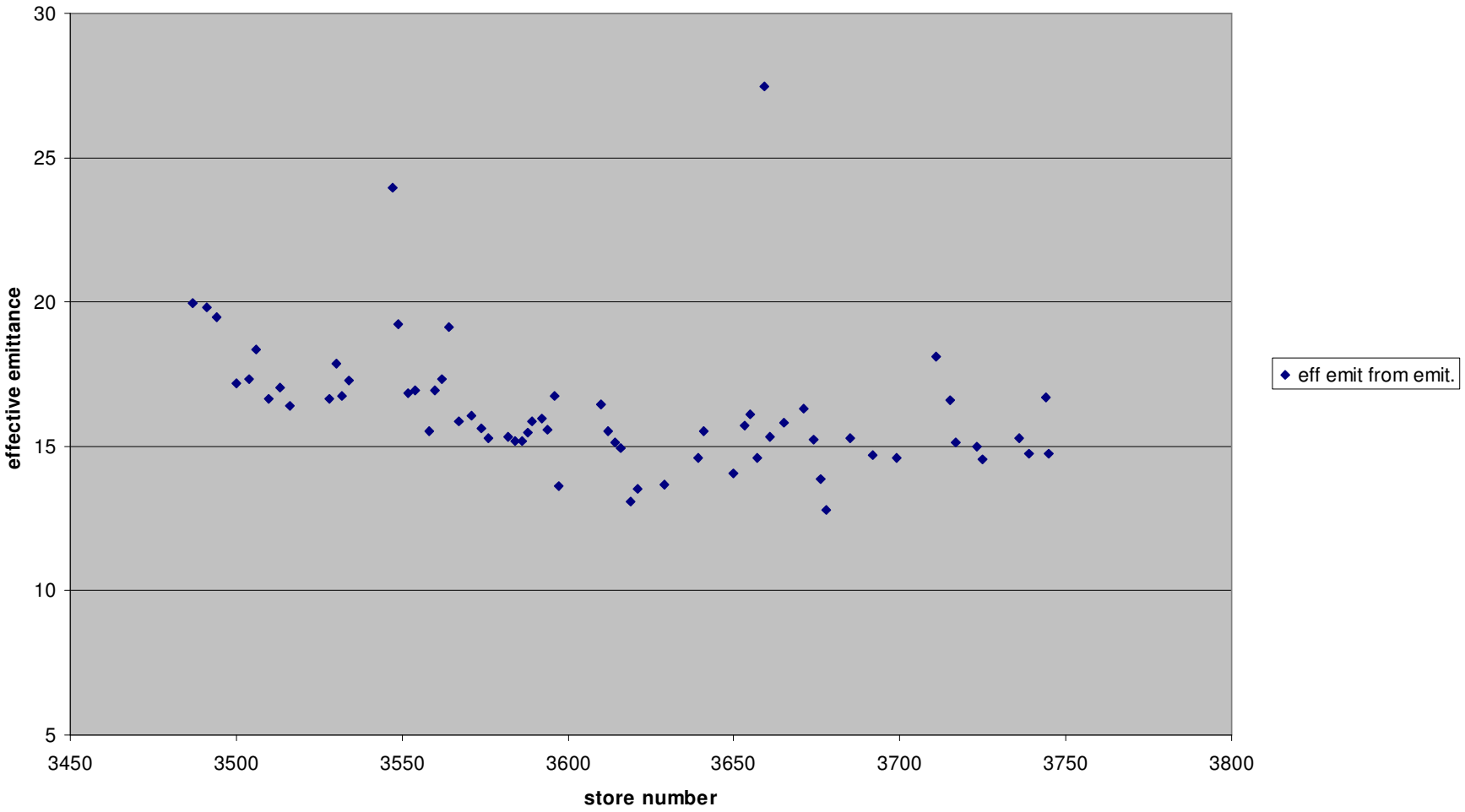


D0 end of store
Expected vs measured

Intercept set to 0

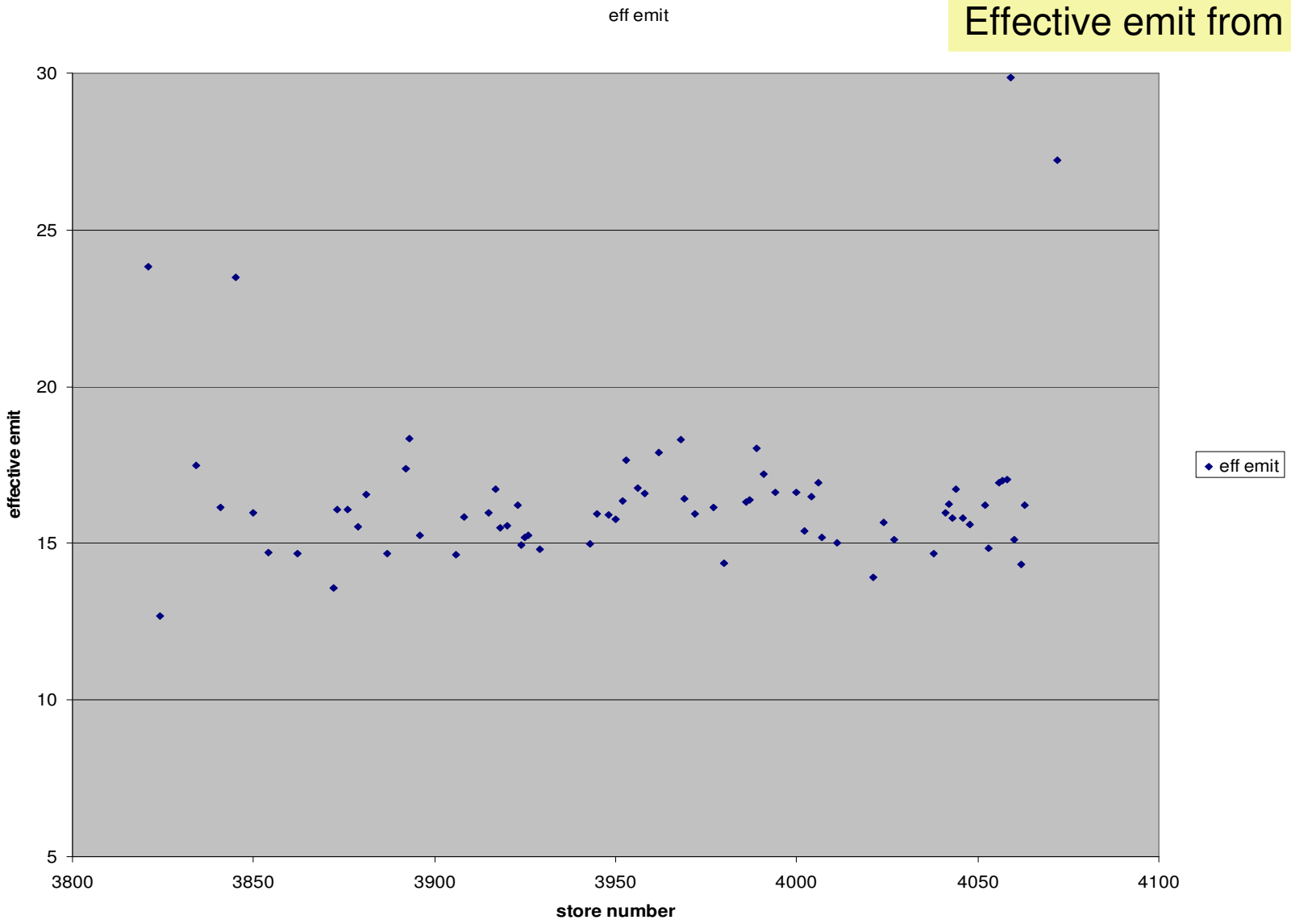
Using stores 3487-3745

effective emit. from FW



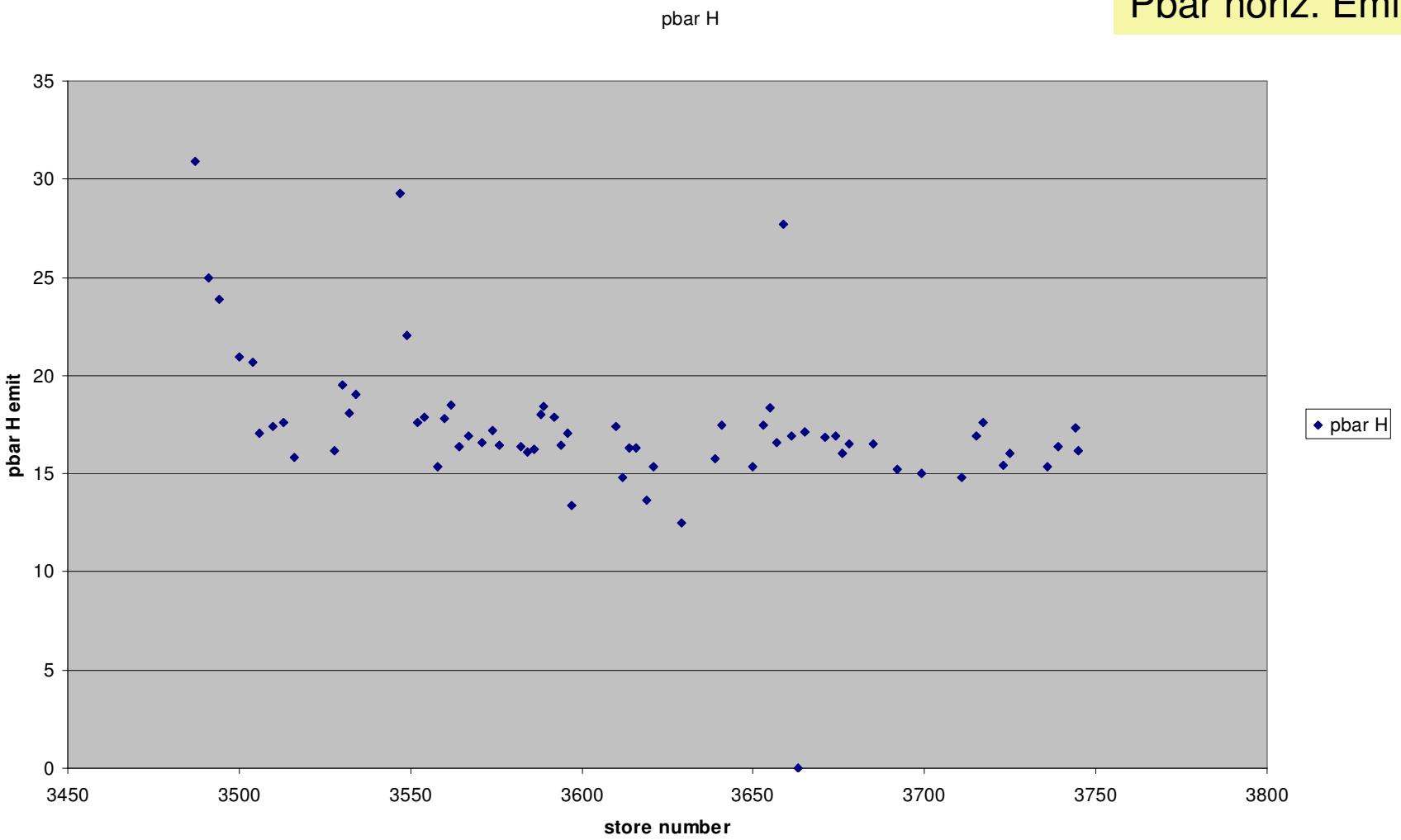
Using stores 3821-4072

Effective emit from FW



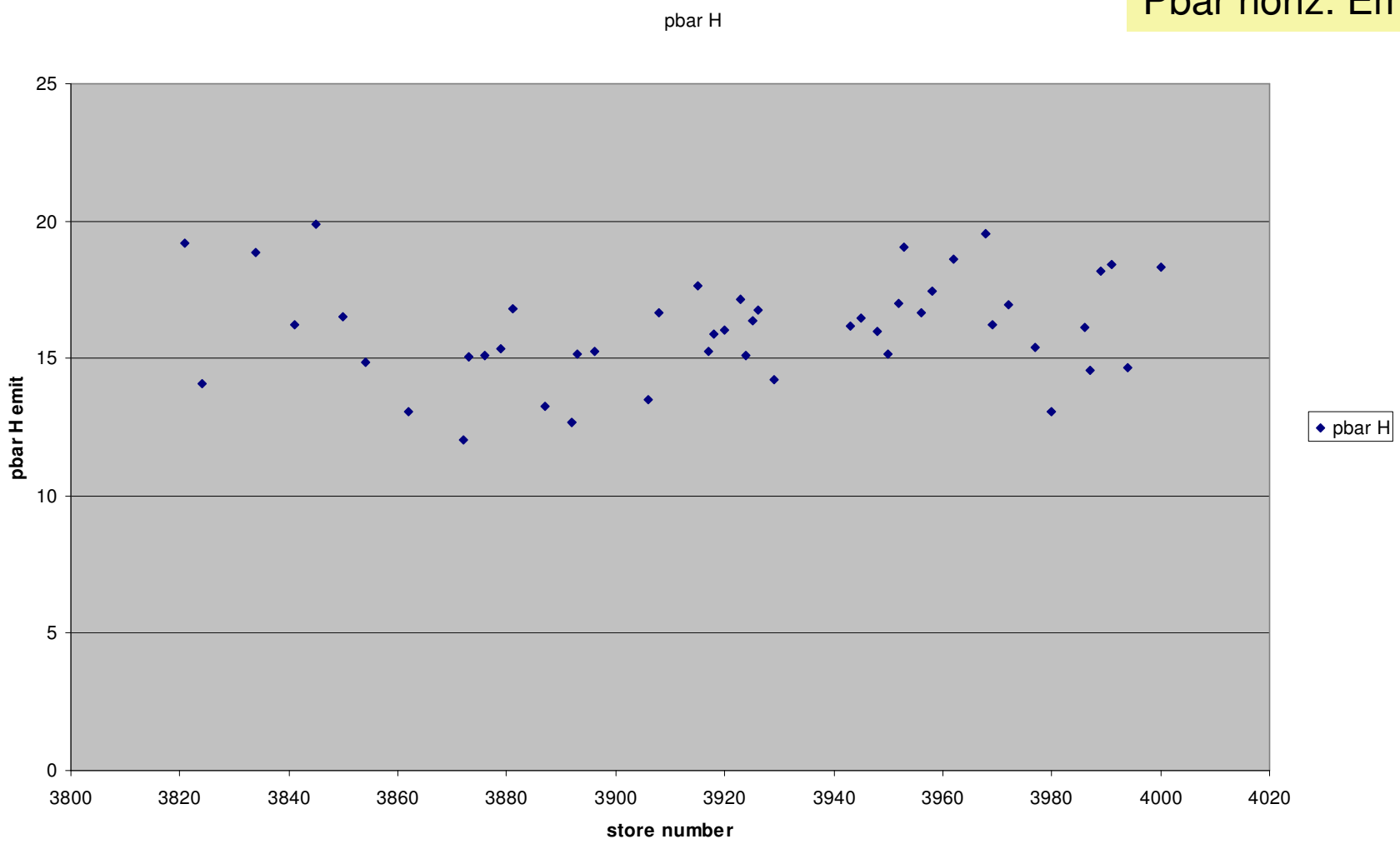
Using stores 3487-3745

Pbar horiz. Emit.



Using stores 3821-4000

Pbar horiz. Emit.



Conclusion

- After the D0 adjustments, the CDF/D0 ratio is approximately flat as a function of store number, and it is approximately 1.11 for initial luminosity and 1.09 for end of store luminosity.
- Calculated luminosities are smaller than measured for both CDF and D0 after the Fall 2004 shutdown. The effect is more prominent for CDF. One contribution,

Conclusion (cont)

affecting both IPs, is that the effective emittance from FW is now bigger than before the shutdown. Another contribution (for CDF) is that the measured beta* is smaller than the assumed one of 35 cm.